

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Listing of Claims:

Claim 1 (Currently Amended) An infrared image sensor comprising:

a substrate having an image area on which infrared radiation is made incident, and a non-image area out of the image area;

a plurality of first heat-sensitive parts arranged in columns and rows on the image area of the substrate, each of the plurality of the first heat-sensitive parts having a thermoelectric conversion function of converting a temperature into an electric signal in the state where a bias current is applied thereto, and a structure of absorbing the infrared radiation;

a plurality of second heat-sensitive parts provided in the non-image area of the substrate, the plurality of second heat-sensitive parts provided to correspond to the respective rows and having the same thermoelectric conversion function as that of the first heat-sensitive parts;

a bias current supply circuit which supplies the bias current to the first heat-sensitive parts and the second heat-sensitive parts;

an output circuit which outputs the electric signal of the first heat-sensitive parts; and

a bias current control circuit which controls the bias current to be fed to the first heat-sensitive parts, according to an electric signal of the second heat-sensitive parts;

wherein the bias current control circuit is configured to supply the same bias current as fed to the first heat-sensitive parts to the second heat-sensitive parts, and the bias current control circuit comprises,

a source follower circuit which inverses the electric signal from the second heat-sensitive parts and outputs an inversed signal; and

a control circuit which controls the bias current flowing through the first heat-sensitive parts, with the inversed signal used as a control voltage.

Claim 2 (Original) An infrared image sensor according to claim 1, the first heat-sensitive parts being arranged in m rows and n columns in the image area, and the second heat-sensitive parts being arranged in m rows and 1 column in the non-image area.

Claim 3 (Original): An infrared image sensor according to claim 1, the non-image area being provided in a position out of an irradiation area of an optical lens for condensing the infrared radiation on the image area.

Claim 4 (Original): An infrared image sensor according to claim 1, further comprising a shielding structure which blocks the infrared radiation made incident through the optical lens such that the infrared radiation is not made incident on the non-image area.

Claim 5 (Cancelled).

Claim 6 (Original): An infrared image sensor according to claim 1, the thermoelectric conversion function comprising a thermoelectric converter.

Claim 7 (Original): An infrared image sensor according to claim 6, the thermoelectric converter sensing a rise in temperature as a decrease in resistance.

Claim 8 (Original): An infrared image sensor according to claim 6, the thermoelectric converter including a semiconductor pn junction which senses a rise in temperature as a non-linear decrease in resistance.

Claim 9 (Original): An infrared image sensor according to claim 1, the thermoelectric conversion function comprises a plurality of thermoelectric converters connected in series.

Claim 10 (Original): An infrared image sensor according to claim 1, each of the first heat-sensitive parts and the second heat-sensitive parts being hung, apart from the substrate, by a low-heat conductor in a hollow-body part provided in the substrate.

Claim 11 (Original): An infrared image sensor comprising:

a substrate having an image area on which infrared radiation is made incident, and a non-image area out of the image area;

a plurality of first heat-sensitive parts arranged in columns and rows on the image area of the substrate, each of the plurality of the first heat-sensitive parts having a thermoelectric conversion function of converting a temperature into an electric signal in the state where a bias current is applied thereto, and a structure of absorbing the infrared radiation;

a plurality of second heat-sensitive parts provided in the non-image area of the substrate, the plurality of second heat-sensitive parts provided to correspond to the respective rows and having the same thermoelectric conversion function as that of the first heat-sensitive parts;

a plurality of address lines arranged for the respective rows, and connected to the first heat-sensitive parts and the second heat-sensitive parts in the same respective rows;

a plurality of first signal lines arranged for the respective columns, and connected to the first heat-sensitive parts in the same respective columns;

a second signal line connected to the second heat-sensitive parts;

a bias current supply circuit which successively applies a fixed bias voltage to the address lines, and selectively supplies a fixed bias current to the first heat-sensitive parts and the second heat-sensitive parts;

an output circuit which outputs a voltage generated on the first signal lines in the image area as a result of supplying the bias current; and

a control circuit which controls the bias current supplied to the first heat-sensitive parts in the image area, on the basis of a voltage generated on the second signal line in the non-image area as a result of supplying the bias current, and suppresses change in a detection signal caused by a rise in temperature of the first heat-sensitive parts due to the bias current.

Claim 12 (Original). An infrared image sensor according to claim 11, the first heat-sensitive parts being arranged in m rows and n columns in the image area, and the second heat-sensitive parts being arranged in m rows and 1 column in the non-image area.

Claim 13 (Original). An infrared image sensor according to claim 11, the non-image area being provided in a position out of an irradiation area of an optical lens for condensing the infrared radiation on the image area.

Claim 14 (Original). An infrared image sensor according to claim 11, further comprising a shielding structure which blocks the infrared radiation made incident through the optical lens such that the infrared radiation is not made incident on the non-image area.

Claim 15 (Original). An infrared image sensor according to claim 11, the bias current control circuit supplying the same bias current as fed to the first heat-sensitive parts to the second heat-sensitive parts, and the bias current control circuit comprising: a source follower circuit which inverses the electric signal from the second heat-sensitive parts and outputs an inversed signal; and a control circuit which controls the bias current flowing through the first heat-sensitive parts, with the inversed signal used as a control voltage.

Claim 16 (Original). An infrared image sensor according to claim 11, the thermoelectric conversion function comprising a thermoelectric converter.

Claim 17 (Original). An infrared image sensor according to claim 16, the thermoelectric converter sensing a rise in temperature as a decrease in resistance.

Claim 18 (Original). An infrared image sensor according to claim 16, the thermoelectric converter including a semiconductor pn junction which senses a rise in temperature as non-linear decrease in resistance.

Claim 19 (Original). An infrared image sensor according to claim 11, the thermoelectric conversion function comprises a plurality of thermoelectric converters connected in series.

Claim 20 (Original). An infrared image sensor according to claim 11, each of the first heat-sensitive parts and the second heat-sensitive parts being hung, apart from the substrate, by a low-heat conductor in a hollow-body part provided in the substrate.